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DATE MAILED: 07/10/97

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 4-30-97

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-15 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☒ Claim(s) 1-15 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of Reference Cited, PTO-892
☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
☐ Interview Summary, PTO-413
☐ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

–SEE OFFICE ACTION ON THE FOLLOWING PAGES–

★ U.S. GPO: 1998-421-632/40208

Response to Amendment

1. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-5, 8 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birch et al. (5,493,339) in view of Kulakowski et al. (5,394,534).

With regard to claim 8, Birch et al. discloses International Standards Organization, ISO-11172 and 13818, generally referred to MPEG standards (including MPEG1 and MPEG2) where MPEG refers to Moving Picture Expert Group. Several manufacturers have developed integrated circuits to decompress MPEG 1 and MPEG2 compressed video data, for example Thompson-CSF, C-Cube and LSI Logic Corporation have all developed such decompression integrated circuits (column 3, lines 8-15); and

A video processor 30 includes video process decompressor 32, compression control processor 34 and video interface 40. The compressed video data input to video process

decompressor 32 includes blocks of data such as compressed video, associated audio, other overhead control information and user data. The video process decompressor 32 reduces decompressed video data which is output to video interface 40. The video process decompressor 32 also separates out the user data which is output to compression control processor 34. The compression control processor 34 identifies and culls out vertical blanking interval data which has been packed into the user data. The VBI is then output from the compression control processor 34 to the video interface 40. Preferably, text (TTX) dam from text processor 18 or from video process decompressor 32 or other source is also provided to video interface 40. Video interface 40 processes these signals to output composite video signal data (column 13, lines 6-23); and

The video interface 40 serves as a video post processor to the video process decompressor, for example, a standard video decompressor based on, for example, MPEG (Moving Picture Expert Group) video standards (column 13, lines 44-47); and

Standard MPEG decompressors decompress compressed video data and produce decompressed video data and system user data. The system user data may be associated with any layer of the MPEG format, referred to as a layer of the MPEG grammar: video sequence layer, groups of pictures layer, picture layer and slice layer. The MPEG decompressor tags the user data with a code to indicate the layer with which the user data is associated. Preferably VBI data is encoded in user data associated with the picture layer. Therefore, the decompression control processor scans through all user data received to cull out those user data packets

associated with the picture layer and then further scans the user data associated with picture layers to cull out those user data packets identified as containing VBI data, for example, closed captioning data, although any form of data may be transferred in this way (column 16, lines 50-65).

Birch et al. does not specifically call for a host processor on a first integrated circuit chip; a peripheral bus connected to the host processor; a secondary processor on a second integrated circuit chip and connected to the peripheral bus. However, Kulakowski et al. Clearly teaches a system having linked host processors. Both batch and in line data compression/decompression are employed. Compression-decompression software modules 251 and 273 provide batch data compression and decompression while integrated circuit chips (hardware compress decompress) 253 and 272 provide in line (real time) data compression-decompression Two data processing systems 240 and 241 are linked by data link 263. Link 263 may be a local area network (LAN), a data communication circuit or transfer of a removable data cartridge manually or via a library, mail etc between the two data processing systems. Host processor 250 in system 240 has a software compress-decompress facility 251, a transfer link facility 252 that involves no compression or decompression and an in-line hardware compress-decompress facility 253. Facilities 251-253 may be physically located in data processing system 240 in host processor 250 or as a part of a channel connection that includes logic switch 254 (programmed or hardware) connecting host processor 250 to facilities 251-253. Dashed line 255 indicates that switch 254 is programmingly controlled by host processor 250. A given data processing system may have only

1) batch compress facility 251 and link facility 252, 2) in-line facility 253 and link facility 252, 3) all facilities 251-253 or 4) either facility 251 or 253 may be located either in data storage system 262 or data link 263 (column 16, line 43 through column 17, line 2).

Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Kulakowski et al. into Birch et al's system in order to provide flexible data compression-decompression controls that enable randomly accessing compressed data through relatively simple accessing mechanisms.

With regard to claim 10, Birch et al. discloses the microprocessor (i.e., general purpose) 240 tells both the MPEG decoder and the analog video encoder which signal to produce.....the circuit is controlled by a microprocessor 240 (column 11, line 66 through column 12, line 12). Also, Kulakowski et al. discloses compression-decompression software modules 251 and 273 provide batch data compression and decompression while integrated circuit chips (hardware compress decompress) (broadly reads on microprocessors) 253 and 272 provide in line (real time) data compression-decompression Two data processing systems 240 and 241 are linked by data link 263 (column 16, lines 46-51).

Claim 11 is rejected the same as claim 8. Thus, argument analogous to that presented above for claim 8 is applicable to claim 11.

With regard to claim 12, Birch et al. discloses Standard MPEG decompressors also decompress compressed audio data. A television-type data stream will contain both video and audio data streams (column 17, lines 5-7).

Claim 1 is rejected the same as claim 8 except claim 1 is a method claim. Thus, argument analogous to that presented above for claim 8 is applicable to claim 1.

Claim 3 is rejected the same as claim 10 except claim 3 is a method claim. Thus, argument analogous to that presented above for claim 10 is applicable to claim 3.

Claim 4 is rejected the same as claim 11 except claim 4 is a method claim. Thus, argument analogous to that presented above for claim 11 is applicable to claim 4.

Claim 5 is rejected the same as claim 12 except claim 5 is a method claim. Thus, argument analogous to that presented above for claim 12 is applicable to claim 5.

4. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birch et al. In view of Kulakowski et al. as applied to claims 1, 3-5, 8, and 10-12 above, and further in view of Harney et al. (5,335,321).

With regard to claim 9, Birch et al. (as modified by Kulakowski et al.) discloses all the claimed subject matter except wherein the secondary processor is a graphic accelerator. However, Harney et al discloses a graphics accelerator subsystem in his video signal processing system (SEE Figure 1, #31).

Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the system as taught by Harney into Birch et al's (as modified by Kulakowski et al) system in order to increase the processing speed while maintaining adequate decompression.

Claim 2, is rejected the same as claim 9 except claim 2 is a method claim. Thus, arguments similar to that presented above for claim 9 is applicable to claim 2.

5. Claims 6, 7, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birch et al. in view of Kulakowski et al. as applied to claims 1, 3-5, 8, and 10-12 above, and further in view of Purcell et al. (5,379,356).

With regard to claim 13, Birch et al. (as modified by Kulakowski et al.) discloses all the claimed subject matter except means for variable length decoding, means for inverse quantizing and means for inverse zig-zagging. However, Purcell et al discloses a decompression system including:

Means for variable length decoding--- (column 113, lines 40-41); means for inverse quantizing (i.e., de-quantizing) the data---Figure 1, #106. Also the de-quantized data is applied to the inverse discrete cosine transform (Figure 1, #107); and means for inverse zig-zagging the decoded data (Figure 3, #308).

Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Purcell et al. into Birch et al's (as modified by Kulakowski et al.) system in order to avoid redundancy by decompressing the signal efficiently and to reproduce a signal without any artifacts.

With regard to claim 14, Purcell et al. Purcell et al clearly shows a motion vector compensation means as part of the decompression operation (Figure 2, #204).

With regard to claim 15, Birch et al discloses a data storage system (Figure 14, #275) and Purcell et al. discloses a frame buffer connected to the secondary processor (i.e., output after it is processed, in a decoding environment) column 11, lines 17-22.

Claim 6 is rejected the same as claim 13 except claim 6 is a method claim. Thus, argument similar to that presented above for claim 13 is applicable to claim 6.

Claim 7 is rejected the same as claim 14 except claim 7 is a method claim. Thus, argument similar to that presented above for claim 14 is applicable to claim 7.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel G. Mariam whose telephone number is (703) 305-4010.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau, can be reached on (703) 305-4706. The fax phone number for this group is (703) 308-5397.

DGM

July 1, 1997

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